COMPRESSOR INSTALLATION INSTRUCTIONS

Always Practice Safety First!

- ❑ Air Bags (Caution)
- ❑ No Smoking
- ❑ Wear Eye Protection
- ❑ Work in a well ventilated area
- ❑ Wear Skin Protection (gloves)
- ❑ Recover refrigerant before making repairs

Follow all Federal, State and Local Regulations.

Proper A/C performance is dependent on all systems performing properly. Make certain that the engine cooling system is at peak operation, and that the cooling fan / fan clutch is operating properly. Worn belts, idlers and tensioners can cause poor cooling system performance due to belt slippage. Low voltage at the A/C clutch assembly can cause premature compressor failure.

Contaminated refrigerant continues to be one of the most significant problems facing the A/C service industry today. Use a refrigerant identifier to verify that the refrigerant in the system is not contaminated with a blend refrigerant or has a high concentration of air.

Tip!!!
When mounting the replacement compressor to the vehicle, the compressor must fit or rest with even contact at each mounting point. Warped brackets must be completely straightened or replaced. Leave mounting bolts loose until all bolts are in place. Tighten bolts equally according to torque specs for that specific compressor. ***Do Not Over-Tighten.*** *(Over-Tightening Causes Leaks)*

Replace the Filter Drier or Accumulator
All **Filter Driers** and **Accumulators** contain a desiccant material. This material is designed to absorb the moisture that has seeped into the A/C system. Moisture in an A/C system can form corrosive contaminates that will cause rapid system failure. It is very important to remove all moisture from the A/C system before charging.

REPLACE OR INSPECT THE CONTROL DEVICES
The **orifice tube** is a control and filter device for accumulator systems, and should always be replaced to ensure proper refrigerant and oil flow through the system. The **thermal expansion valve** is the control device for systems using a receiver/drier. It should be examined and replaced, if found to be contaminated.

A Clean A/C System is Imperative
When a compressor fails, tiny internal particles mix with oil and spread throughout the entire system. This contaminated oil, as well as moisture and other corrosives must be removed to avoid premature failure of the replacement compressor. Clean the entire system thoroughly with an effective cleaning agent and/or replace contaminated parts. Air alone does not remove contaminants. Two methods used today are effective in removing oil and contaminants:

(1) liquid cleaning with an effective **cleaning agent**

Flushing with Dura Flush II or similar non-oil based flush designed specifically for automotive A/C use, is a proven method to clean A/C system components when used with a flush cylinder and pressurized air.

Closed loop flushing with a power flush machine and the machine manufacturer's approved solvent is an effective method to clean A/C system components. This cleaning method is utilized by several major OE service providers.

(2) **closed loop power cleaning** using a refrigerant.

Note
Newer **condenser** designs are difficult, if not impossible to thoroughly clean, and in many cases must be replaced.

Proper Evacuation
The A/C system must be free of moisture and air to work properly. Removing the air and moisture with an A/C system **vacuum pump** for a minimum of forty-five minutes to an hour, is necessary to deliver proper long lasting A/C performance.

Lubrication
The only moving component in the A/C system is the compressor, and adequate lubrication is critical. If oil or refrigerant charges are incorrect, internal damage to the compressor will occur! If uncertain about the proper lubricant type or amount, refer to the Capacities Guide, the under hood decal, or an O.E. service manual.

To ensure proper compressor lubrication, install half the required system oil in the suction side. This may require turning the compressor shaft as the oil is installed. The remaining amount of required system oil should be installed in the accumulator or low side of the system.

To ensure that the front seal is lubricated and does not leak, after the oil is installed, the compressor must be placed or held with the front seal down for 1 to 3 minutes, to allow oil to coat the seal. If this seal is not lubricated before installation, refrigerant may leak.

REMEMBER!!!
Compressors are shipped with assembly lube or ICE 32. **DO NOT DRAIN. Add the correct type and amount of lubricant per specific system specifications.**

Use only the recommended Refrigerant Type and Amount
Only **R12** or **R134a** can be used to maintain proper system performance. The correct amount of charge is critical for system efficiency and durability, because the refrigerant carries the lubricant through the system. Specifications can be found in the Capacities Guide, the under hood decal or an O.E. service manual.

Tip!!!
Dual A/C systems require additional refrigerant and oil, check vehicle specifications.

Compressor Rotation
Always rotate the compressor shaft at least 10 revolutions after the hoses are connected and prior to starting the engine. This will pump the excess liquid lubricant out of the compressor cylinders and into the system.

Clutch
Clutch coil voltage should be within one volt of system operating voltage. Anything less weakens the magnetic force of the clutch allowing slippage, increased heat, and failure. Clutch air gap (between hub and pulley) is important and should be checked before installation to ensure no changes have occurred during shipping and handling. Ask your suppliers for air gap specifications.

TIP!!!
After installation, with the engine idling, switch the compressor off and on 10 to 12 times. This will burnish the hub and pulley face removing any machining glaze or rust inhibitors and enhance complete surface contact.

Verify the Repair
Use an **electronic leak detector** or **fluorescent dye** to check for leaks. A leak will cause system failure. When repairs are finished, ensure that the job is done right the first time by doing temperature drop testing.

Suggested A/C tools & equipment:

- ❑ *A/C O-Ring Lube*
- ❑ *Charging Cylinder*
- ❑ *Gauge Set*
- ❑ *Leak Detector*
- ❑ *Refrigerant Identifier*
- ❑ *Spanner Wrench*
- ❑ *Vacuum Pump*

This compressor is warranted to be free from defects in materials and workmanship at the time of its manufacture. See your supplier for details of the terms and conditions of this warranty.

Temperature Control Division
1801 Waters Ridge Dr.
Lewisville, TX 75057

**Tech Tips can be found at www.4s.com*

COMPRESSOR MOUNTING TORQUE AND CLUTCH AIR GAP

***NOTE: This is a reference guide only. Always refer to OEM for specific application when available.**

	Torque Compressor to Engine	Torque Compressor to Bracket	Torque Manifold/Fitting	Air Gap	Torque Shaft Nut	Method of Adjustment
2 CY 2C90	Refer to OEM Specification				20 ft. lbs.	Non Adjustable
6C17	30 ft. lbs. 2.2/2.5 40 ft. lbs. 3.0 30 ft. lbs. 3.3/3.5	21 ft. lbs. 2.2/2.5 40 ft. lbs. 3.0 30 ft. lbs. 3.3/3.5	15-20 ft. lbs. 2.2/2.5 15-20 ft. lbs. 3.0 15-20 ft. lbs. 3.3/3.5	.020-.035	12 ft. lbs.	Shim
A590	30 ft. lbs. 2.2/2.5 40 ft. lbs. 3.0 30 ft. lbs. 3.3/3.5	21 ft.lbs. 2.2/2.5 40 ft. lbs. 3.0 30 ft. lbs. 3.3/3.5	15-20 ft. lbs. 2.2/2.5 15-20 ft. lbs. 3.0 15-20 ft. lbs.	.020-.035	12 ft. lbs.	Shim
A6	Refer to OEM Specification			.022-.057	N/A	Press Fit
BOSCH	Refer to OEM Specification			.015-.030	*	Shim
C171	30 ft. lbs. 2.2/2.5 40 ft. lbs. 3.0 30 ft. lbs. 3.3/3.5	21 ft. lbs. 2.2/2.5 40 ft. lbs. 3.0 30 ft. lbs. 3.3/3.5	15-20 ft. lbs. 2.2/2.5 15-20 ft. lbs. 3.0 15-20 ft. lbs. 3.3/3.5	.020-.035	12 ft. lbs.	Shim
CVC	50 ft. lbs.	50 ft. lbs.	20 ft. lbs.	.012-.024	106 In. lbs.	Shim
DCV, DKV, KC-50		30 ft. lbs.	17 ft. lbs.	.016-.030	10 ft. lbs.	Shim
DCW, DKS		30 ft. lbs.	17 ft. lbs.	.016-.030	10 ft. lbs.	Shim
FORD FS6	17 ft. lbs. to 25 ft. lbs.	17 ft. lbs. to 25 ft. lbs.	15-20 ft. lbs.	.020-.035	12 ft. lbs.	Shim
FORD FX15 FS10	15-21 ft. lbs.	N/A	13-17 ft. lbs.	.013-.033	12 ft. lbs.	Shim
Ford Scrolls	Refer to OEM Specification			.014-.030	13 ft. lbs.	Shim
FS-18	Bolts = 35 ft. lbs. Nuts = 2-18 ft. lbs.	N/A	11 ft. lbs.	.014-.026	10 ft. lbs.	Shim
FS-20	Bolts = 35 ft. lbs. Nuts = 2-18 ft. lbs.	N/A	11 ft. lbs.	.014-.026	10 ft. lbs.	Shim
HG 500, HG850	Refer to OEM Specification			*	20 ft. lbs.	Non Adjustable
HG 1000	Refer to OEM Specification			*	20 ft. lbs.	Non Adjustable
HITACHI AXIAL	Refer to OEM Specification			.015-.033	*	Shim
HITACHI RADIAL	36 ft. lbs.	16 ft. lbs.	*	.015-.033	*	Shim
HR6, DA6, HR6HT	40 ft. lbs.	37 ft. lbs.	25 ft. lbs.	.015-.025	N/A	Press Fit
HS-15	15.0-22.6 ft. lbs.	12.5 ft. lbs.	12.0-19.2 ft. lbs.	.0157-.0236	7.5-11.3 ft. lbs.	Shim
HS-17	15.0-22.6 ft. lbs.	N/A	12.0-19.2 ft. lbs.	.014-.026	7.5-11.3 ft. lbs.	Shim
HS-18	14.8-18.4 ft. lbs.	N/A	13.1-17.3 ft. lbs.	.014-.026	7.5-11.3 ft. lbs.	Shim
HS-20	14-21 ft. lbs.	N/A	7.5-11.3 ft. lbs.	.014-.026	7.5-11.3 ft. lbs.	Shim
KEIHIN	Refer to OEM Specification			.012-.024	33 ft. lbs.	Shim
MATSUSHITA	36 ft. lbs.	16 ft. lbs.	*	.015-.030	*	Shim
MITSUBISHI	36 ft. lbs.	16 ft. lbs.	*	.015-.030	*	Shim
NIHON CALSONIC	36 ft. lbs.	16 ft. lbs.	*	.015-.030	*	Shim
NIPPONDENSO 10P	36 ft. lbs.	16 ft. lbs.	*	.016-.030	10 ft. lbs.	Shim
NIPPONDENSO 6E	36 ft. lbs.	16 ft. lbs.	*	.016-.030	12 ft. lbs.	Shim
NIPPONDENSO 6P	36 ft. lbs.	16 ft. lbs.	*	.020-.035	12 ft. lbs.	Shim
PANASONIC NA1301		19 ft. lbs.	10-14 ft. lbs.	.016-.030	*	Shim
R4	40 ft. lbs.	24 ft. lbs. 30 ft. lbs. Diesel	25 ft. lbs.	.020-.040	N/A	Press Fit
SA1150	Refer to OEM Specification			.014-.026	10 ft. lbs.	Shim
SD 508, 510, 709		30 ft. lbs.	17 ft. lbs.	.016-.031	10 ft. lbs.	Shim
SEIKO-SEIKI	16-20 ft. lbs.			.015-.030	10 ft. lbs.	Shim
SELTEC	Refer to OEM Specification			.015-.030	10 ft. lbs.	Shim
TR 70, TR105		30 ft. lbs.	17 ft. lbs.	.013-.025	10 ft. lbs.	Shim
TRF090, TRS090	Refer to OEM Specification			.014-.026	13 ft. lbs.	Shim
TV12, TV14	Refer to OEM Specification			.016-.024	10 ft. lbs.	Shim
V5	40 ft. lbs.	37 ft. lbs.	25 ft. lbs.	.015-.025	N/A	Press Fit
YORK 206	Refer to OEM Specification			*	20 ft. lbs.	Non Adjustable
YORK 209, 210	Refer to OEM Specification			*	20 ft. lbs.	Non Adjustable

* Check with the OEM for each vehicle for these specifications. Not available from TCD.

COMPRESSOR OIL CHART

Refer to the O.E. Manufacturer's Specifications when installing a compressor.
The following chart is a guideline to be used only if you do not have access to the OE specs.
It is recommended that all of the original oil be flushed out of the system when performing major repairs.
This chart is for vehicles using R134a, both OE and retrofitted.

VEHICLE MANUFACTURER	COMPRESSOR MANUFACTURER	COMPRESSOR MODEL	Part Number
All	Hybrid Vehicle	-	59889/409610
Acura	Nippondenso	10P	59007/409503
Alfa Romeo	Sanden	SDV	59007/409503
Alfa Romeo	Nippondenso	SC8	59007/409503
Audi	Diesel Kiki/Zexel	DCW	59007/409503
Audi	Nippondenso	10P	59007/409503
Audi	Sanden	SDV	59007/409503
BMW	Seiko Seiki	SS	59007/409503
BMW	Nippondenso	10P	59007/409503
BMW	Bosch / Behr	Wing	59007/409503
BMW	Bosch / Behr	Axial	59003/409501
Chrysler	Nippondenso	10PA	59007/409503
Chrysler	Nippondenso	6C / 6CA	59007/409503
Chrysler	Sanden	TR / TRS	59007/409503
Chrysler	Sanden	SD	59002/409502
Chrysler	Mitsubishi	FX	59007/409503
Jeep / Eagle	Sanden	SD	59002/409502
Jeep / Eagle	Sanden	TR	59007/409503
Jeep / Eagle	Nippondenso	10P / 10PA	59007/409503
Citroen	Sanden	SD7	59002/409502
Citroen	Sanden	SDV	59007/409503
Citroen	Harrison	V5	59003/409501
Ferrari	Sanden	SDV	59007/409503
Fiat	Sanden	SD7	59002/409502
Fiat	Nippondenso	SC8	59007/409503
Ford	Ford	FS10 / FX15	59007/409503
Ford	Nippondenso	10P / 10PA	59007/409503
Ford	Sanden	SD	59002/409502
Ford	Panasonic	Rotary	59007/409503
Ford	Ford	FS6	59007/409503
Ford	Harrison	A6	59003/409501
Ford	Sanden	TR, TRS	59007/409503
Ford	Ford	FS-18, FS-20	59007/409503
Ford	Ford Scroll		59007/409503
G.M.	Delphi / Harrison	V5 Retro	59003/409501
G.M.	Delphi / Harrison	V5 R134a	59003/409501
G. M.	Four Seasons	88 series HR6 / HD6 / HT6	59007/409503
G.M.	Delphi / Harrison	HR6 / HD6 / HT6	59003/409501
G.M.	Delphi / Harrison	R4	59003/409501
G.M.	Nippondenso	10PA	59007/409503
G.M.	Sanden	SD7	59002/409502
G.M.	Sanden	SD5	59002/409502
Geo	Nippondenso	10PO	59007/409503
G.M. Saturn	Diesel Kiki/Zexel	DKV	59003/409501
G.M. Saturn	Diesel Kiki/Zexel	DCV	59003/409501
G.M.	Harrison	CVC	59003/409501
Honda	Sanden	TR	59007/409503
Honda	Sanden	SD	59002/409502
Honda	Nippondenso	10P	59007/409503
Honda	Nippondenso	HADSYS. 7 Cyl.	59007/409503
Hyundai	Ford	FX15 / FS10	59007/409503
Hyundai	Halla	FX15 / FS10/HS-15,17,18,20	59007/409503
Infinity	Zexel	-	59003/409501
Infinity	Calsonic	CVW	59007/409503
Infinity	Zexel	-	59007/409503
Isuzu	Zexel	-	59007/409503
Isuzu	G.M.	V5	59007/409503
Isuzu	Diesel Kiki/Zexel	KC50	59003/409501
Isuzu	Diesel Kiki/Zexel	Rotary	59007/409503
J. I. Case	Sanden	SD	59002/409502
Jaguar	Sanden	SD7H	59002/409502

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VEHICLE MANUFACTURER	COMPRESSOR MANUFACTURER	COMPRESSOR MODEL	Part Number
Jaguar	Sanden	SD	59002/409502
John Deere	Nippondenso	10P	59007/409503
Lamborghini	Sanden	SD7	59002/409502
Lancia	Sanden	SD7	59002/409502
Mack	Sanden	SD	59002/409502
Land Rover	Sanden	TRS	59007/409503
Land Rover	Sanden	SD7	59002/409502
Lexus	Nippondenso	10PA	59007/409503
Lotus	Sanden	SD	59007/409503
Mazda	Panasonic	Rotary	59007/409503
Mazda	Nippondenso	TV	59002/409502
Mazda	Ford	FS10	59007/409503
Mazda	Sanden	SD	59002/409502
Mazda	Zexel		59007/409503
Mercedes	Harrison	A6, R4	59003/409501
Mercedes	Nippondenso	6CA	59007/409503
Mercedes	Nippondenso	10P / 10PA	59007/409503
Mercedes	Sanden	SD6V	59007/409503
Mercedes	York		59009/409500
Mitsubishi	Mitsubishi	FX / MSC	59007/409503
Mitsubishi	Nippondenso	10P / 10PA	59007/409503
New Holland	Sanden	SD	59007/409503
Nissan	Diesel Kiki/Zexel	DKV / DCV	59003/409501
Nissan	Calsonic	Rotary	59007/409503
Nissan	Diesel Kiki/Nihon	DKS / Rotary	59007/409503
Nissan	Diesel Kiki/Zexel	DKV / Rotary	59003/409501
Opel	Delphi / Harrison	V5	59003/409501
Opel	Nippondenso	6CA	59007/409503
Opel	Sanden	7SB	59007/409503
Peterbilt	Sanden	SD	59002/409502
Peugeot	Sanden	SD	59002/409502
Peugeot	Sanden	SDV	59007/409503
Porsche	Nippondenso	10P	59007/409503
Peugeot	Sanden	SD7	59002/409502
Renault	Sanden	SDV	59007/409503
Renault	Sanden	SD7	59002/409502
Renault	Sanden	TRS	59007/409503
Renault	Zexel	DKS-15CH	59007/409503
Rolls Royce	Sanden	SDV	59007/409503
Rover	Sanden	SD7	59002/409502
Rover	Sanden	SDV	59007/409503
Rover	Nippondenso	10P	59007/409503
Saab	Seiko Seiki	SS	59007/409503
Saab	Sanden		59009/409500
Saab	Nippondenso	7SB	59007/409503
Seat	Sanden	SDV	59007/409503
Skoda	Sanden	SD7	59002/409502
Subaru	Zexel	Rotary	59003/409501
Subaru	Diesel Kiki	15CH	59007/409503
Suzuki	Sanden	SD	59002/409502
Suzuki	Nippondenso	10P	59007/409503
Toyota	Nippondenso	10P / 10PA	59007/409503
Toyota	Nippondenso	TV	59002/409502
Vauxhaul (GM)	Delphi / Harrison	V5	59003/409501
Volkswagen	Sanden	SD / SD7	59002/409502
Volkswagen	Sanden	SDV	59007/409503
Volkswagen	Sanden	7SB	59007/409503
Volkswagen	Zexel	DCW	59007/409503
Volvo	Seiko Seiki	SS	59007/409503
Volvo	Sanden	SD / SD7	59002/409502